be a much greater defect than it was forty years ago, and whether one agrees or disagrees with the conclusions stated by the author, he cannot be accused of undervaluing the importance of palæobotanical data. The study of the development of organs is deliberately omitted on the ground that it throws little light on the processes of evolution. The researches of Schwendener gave a stimulus to the study of anatomy from a physiological point of view, and the last edition of Haberlandt's "Physiological Plant Anatomy" admirably represents the present state of our knowledge in this branch of botany. It is surprising that Prof. Jeffrey makes no reference to Haberlandt's work.

"The Anatomy of Woody Plants" cannot be said to be a comprehensive text-book; the treatment is essentially eclectic, and the subject-matter is to a large extent limited by the scope of the author's well-known and invigorating researches. The main object is to interpret the structural features of recent and fossil woody plants in terms of descent. An anatomical treatise on broader lines, in which the anatomy of the lower plants receives adequate treatment, has still to be written.

Prof. Jeffrey believes that the herbaceous type of dicotyledon is derived from ancestors with woody stems, and in this connection the different types of medullary rays are fully discussed. The illustrations are excellent, the great majority being new. Chaps. i.–x. treat of the cell, tissue-systems, fibrovascular tissues, the epidermis, and fundamental tissues. Special attention is given to the structure of the secondary xylem. "We have," says the author, "in the woody structures past and present an almost perfect biological document, carrying back the history of plants in relation to their changing conditions of environment into remote epochs of our earth's history."

Much interesting and to a large extent new information is given about the elements of woody tissue, tracheids, vessels, fibres, etc., based on the examination of macerated material. Arguments are adduced in support of the view that "the distinction between spring and summer tracheids did not exist in the case of Palæozoic woods," a statement—implying, as it does, the prevalence of uniform climatic conditions throughout the Palæozoic era—scarcely consistent with the geological and botanical evidence afforded by the Glossopteric flora and the rocks associated with the Permo-Carboniferous plant-beds of Gondwanaland. Rings of growth, though generally lacking in Palæozoic stems from European localities, are far from being universally absent. An annual winter period of rest is believed to be the cause of the appearance of longitudinal parenchymatous elements in wood. Attention is paid to the root, stem, leaf, microsporangia, and seeds, and there is an interesting chapter on the canons of comparative anatomy. Chaps. xviii.–xxix. are devoted to the Lycopsida, Pteropsida, Gymnosperms, and Angiosperms; chaps. xxx.–xxxii. include anatomical structure and climatic evolution, evolutionary principles exhibited by the Compositæ, and a very useful account of anatomical technique.

Prof. Jeffrey's book, which is admirably produced by the Chicago Press, is an original and stimulating contribution to botanical literature. The author discusses various controversial questions and raises many points on which there is considerable difference of opinion. His views on the primitive nature of the Abietineæ and their greater antiquity than the Araucarineæ are stated with an assurance that is almost pontifical. Too little weight is attached to the study of reproductive organs, and the very strong evidence of the records of the rocks in favour of the greater antiquity of the Araucarian stock is either ignored or very partially treated. There are no references to the published work of other authors, and no bibliography—a very serious blemish in a book which is presumably intended for students unfamiliar with the widely scattered original literature, and ought to be a guide to those who wish to go further along particular lines of inquiry and to see what has been said on the other side.

The fact that Prof. Jeffrey is an original investigator whose position entitles him to speak with authority increases one's regret that his attitude is not more in keeping with the best traditions of scientific exposition. A. C. SEWARD.

OUR BOOKSHELF.

Telegraph Practice: A Study of Comparative Method. By J. Lee. Pp. ix+102. (London: Longmans, Green, and Co., 1917.) Price 2*s.* 6*d.* net.

OF books on the art of electric telegraphs, covering more or less completely technical details and principles of the numerous types of apparatus, there has been an increasing, and it may be even a more than ample, supply. That the science of telegraphy has not been equally well served is probably due to the artificial elimination in England of the engineer from any sufficient practical direction of the method of utilising the machines which he designed and installed. However that may be, the appearance of Mr. Lee's book at once brings the fact into prominence and goes a long way towards filling the gap which it reveals. Mr. Lee's long association with the traffic control organisation of the British Post Office has placed him in an excellent position to ascertain all the factors of the numberless problems of the science of telegraphy; and his admirable powers of grasping the facts and of presenting them in a concise and cogent manner render this little book of 100 pages a storehouse of valuable details and a veritable handbook for the expert. It is withal a very attractively readable description of one of the most valuable of modern "utilities." It is a "study" of telegraph practice which, while glancing at the past, deals in a comparative sense with the present, and indulges in illuminating conjecture in regard to the future. The author regrets that the name of the originator of an ingenious method of classifying Press telegrams is unknown; if he should wish to know who originated the "indicator" word of

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registered telegraphic addresses which he describes on another page the present writer might be able to enlighten him.

The author's outlook on telegraphy is that of the optimist who knows, and of the prophet who, by a balanced consideration of the past, can foresee and frame a just conception of the future, and is thereby enabled to point forward "to a time when telegraph practice will . . . serve the economic and industrial and social needs far more vitally and far more intelligently than it has been called upon to do in the past." A. J. S.

Thomas A. Edison: The Life-story of a Great American. Pp. 216. (London: G. G. Harrap and Co., 1917.) Price 3*s.* 6*d.* net.

THE name of no great man of science or inventor is so familiar to the "man in the street" as that of Thomas Alva Edison, and the anonymous volume before us purports to give some account of his life and work. The eight chapters bear no titles, but are prefaced by rather sensational contents-headings, including such phrases as "Apprenticed to Magic," "Edison the Napoleon of Modern Times," "Let there be Light," "And this Light emanated from America," etc. The author succeeds in conveying a vivid picture of the manifold activities of his hero, but, while tracing in chronological order Edison's various achievements, the text consists largely of a series of thumbnail sketches of the man and of episodes in his career, interspersed with extravagant eulogies which will grate a little on the minds of sensitive readers.

The descriptions of the inventions will convey very little to readers who are not already familiar with them, and those who are will regret the neglect to give credit to any but Edison and his personal assistants. Thus, while ample space is accorded to Edison's world-wide search for a suitable fibre for his incandescent lamp, Swan's name is not mentioned. Again, one would imagine that the kinematograph was wholly Edison's invention. As a matter of fact, he was preceded on the photographic side by Muybridge and by Marey, and did not, in the first instance, carry his apparatus beyond the peep-show stage. The credit of first projecting the pictures upon a screen from a film belongs to R. W. Paul in England and to Lumière in France. E. C.

French Scientific Reader. Edited, with Introduction, Notes, and Vocabulary, by Dr. Francis Daniels. Pp. xvii+748. (New York: Oxford University Press; London: H. Milford, 1917.) Price 10*s.* 6*d.* net.

DR. DANIELS has compiled a judicious anthology from the great scientific papers of a number of distinguished French men of science, among whom, to name a few, may be mentioned Laplace, Pasteur, and Fabre. The book will serve several purposes: it provides ample material for a course in scientific French for students preparing for graduation in science; it brings out convincingly the peculiar fitness of the French language to serve as a medium of scientific expression; and it will give readers sound ideas of the development of modern science.

The selected passages cover very fairly the various branches of physical and biological science; the copious vocabulary will largely dispense with the need for a dictionary; and the notes, of which there are sixty-five pages, will provide teachers of French with the information necessary to enable them to understand the text.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

British Scientific Instrument Makers' Research.

READERS of NATURE may be interested to hear that the recommendation made by Mr. E. S. Hodgson in the issue of February 7 has been anticipated by the optical trade.

The British Optical Instrument Manufacturers Association is an organisation which was formed in the early part of the war, and includes almost all the important manufacturers. This association has co-operated with the Ministry of Munitions in increasing the output of optical munitions with a degree of success that could not have been expected. It has energetically assisted in the formation of the new Opto-Technical Educational Institute under the Imperial College of Science and Technology at South Kensington, and has now so far completed negotiations with the Department of Scientific and Industrial Research that it is scarcely premature to say that a Scientific Instrument Research Association under the auspices of that Department will be in existence almost immediately.

The trade association is for the present fully occupied with the new requirements for military and naval purposes, but it has a Technical Committee, which includes the best expert optical knowledge of the country, that would be glad to place its experience at the disposal of all departments which require problems to be investigated or requirements to be met.

Applications should be made to the Secretary, 6 Moorgate Street, London, E.C.2.

CONRAD BECK,
President, British Optical Instrument Manufacturers Association, Ltd.

Alcohol Fuel and Engines.

IN the sympathetic notice in NATURE of October 18, 1917, of the first report of the Special Committee on Alcohol Fuel and Engines of the Australian Commonwealth Advisory Council of Science and Industry attention is directed to the part that benzol, obtained from the distillation of coal, may play, after the war, as a substitute for petrol. Undoubtedly in Great Britain very large quantities of this fuel will be available for peaceful purposes, but in Australia very small quantities of it will be produced.

The terms of reference of the Committee specify the use of fuel that may be produced in Australia, and hence, as the writer of the article in NATURE supposes, practically do not cover the use of benzol.

At the same time the Committee has not neglected the possibilities of using mixtures of alcohol and benzol which, as is well known, enable the engine to be started with greater ease than if alcohol alone were used.

THOMAS R. LYLE,
Chairman of Special Committee on Alcohol Fuel and Engines.

314 Albert Street, East Melbourne, January 8.

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